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Appl. No. 10/538,525
Amdt. Dated June 20, 2007
Reply to Office Action of May 9, 2007

REMARKS

Claims 1 to 15 and 17 to 20 are currently pending in the present application. Claims 1, 14 and 15 are amended herein. Claims 2 and 9 are cancelled. No new matter is added by the amendments. Reconsideration of the present application, as amended, under 37 C.F.R. 1.116 is respectfully requested.

Claims 1, 3 to 9, 11 to 15 and 17 to 19 stand rejected by the Action under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,282,263 to Arndt et al. (hereinafter "Arndt"). Claim 9 is cancelled, accordingly the rejection of claim 9 is moot. Applicants respectfully submit that Arndt does not expressly or inherently disclose all of the elements set forth in independent claims 1, 14 and 15. Thus, Arndt does not anticipate claims 1, 14 and 15 or claims 3 to 8, 11 to 13, or 17 to 18, which depend therefrom.

The present invention relates to an X-ray source comprising an electron source for the emission of electrons, a target for the emission of X-rays in response to the incidence of the electrons and an outcoupling means for outcoupling the X-rays. Accordingly, claim 1 now claims an X-ray source comprising: an electron source for the emission of electrons, a target for the emission of characteristic, substantially monochromatic X-rays in response to the incidence of the electrons, said target comprising a metal foil of a thickness of less than 10µm and a base arrangement for carrying said metal foil, wherein the metal of said metal foil has a high atomic number allowing the generation of X-rays and the material substantially included in the base arrangement has a low atomic number not allowing the generation of X-rays, and an outcoupling means, which generally only transmits X-rays propagating in the reflection direction of the metal foil, for outcoupling the X-rays on the side of the metal foil on which the electrons are incident and which is opposite to the side of the base arrangement, wherein said base arrangement comprises a rotatable base plate of a material having an atomic number of less than 10.

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To avoid including bremsstrahlung radiation in the X-ray beam an outcoupling means is provided which generally only transmits X-rays propagating in the reflection direction of the metal foil, i.e. no X-rays in the transmission direction are outcoupled. This ensures that almost only characteristic monochromatic X-rays are outcoupled since bremsstrahlung radiation almost completely propagates in the transmission direction but neither in the reflection direction, nor in said angular range. Arndt does not disclose an outcoupling means, which generally only transmits X-rays propagating in the reflection direction of the metal foil, for outcoupling the X-rays on the side of the metal foil on which the electrons are incident and which is opposite to the side of the base arrangement, as is now claimed in claim 1. The Action cites reference numeral 6 in Fig. 2 of Arndt for disclosing this feature. However, Arndt merely describes reference numeral 6 as an X-ray window consisting of a thin tube of material with low X-ray absorption and high mechanical strength, for example beryllium. Arndt fails to describe an outcoupling means, which generally only transmits X-rays propagating in the reflection direction of the metal foil.

Claim 1 now also claims a base arrangement comprising a rotatable base plate of a material having an atomic number of less than 10. As discussed in the specification on page 8, lines 20 to 25, a base plate material having an atomic number of less than 10 allows for absorption of electron energy without producing bremsstrahlung X-rays. Arndt fails to disclose a base arrangement comprising a rotatable base plate of a material having an atomic number of less than 10. In fact, Arndt is silent regarding the base plate material. Accordingly, for at least these reasons, independent claim 1 is patentable over Arndt.

Independent claims 14 and 15 also claim a base arrangement that comprises a rotatable base plate of a material having an atomic number of less than 10. Accordingly, claims 14 and 15 are patentable over Arndt for at least the reasons relating to the base plate discussed with respect to claim 1.

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Dependent claims 3 to 8, 11 to 13, and 17 to 18 depend from claims 1 and 15 and provide further features, thus claims 3 to 8, 11 to 13, and 17 to 18 are clearly distinguishable over Arndt for at least the reasons discussed with respect to claims 1 and 15. Accordingly, the applicants respect that the rejections under 35 U.S.C. § 102(b) of claims 1, 3 to 8 and 11 to 13, and 17 to 18 should be withdrawn and claims 1 and claims 1, 3 to 8 and 11 to 15, 17 and 18 should be allowed.

Claims 1 to 3, 6 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over of U.S. Patent No. 4,622,687 to Whitaker et al. (hereinafter "Whitaker") in view of Arndt. Applicants respectfully submit that Whitaker and Arndt, when combined as suggested by the Action, fail to disclose all elements of independent claim 1.

Arndt fails to disclose the invention of claim 1 for the reasons discussed above. Whitaker, similar to Arndt, fails to disclose an outcoupling means, which generally only transmits X-rays propagating in the reflection direction of the metal foil, for outcoupling the X-rays on the side of the metal foil on which the electrons are incident and which is opposite to the side of the base arrangement, as is claimed in claim 1. The Action broadly cites Fig. 15 of Whitaker for disclosing an outcoupling means. However, as acknowledged by the Action, the outcoupling means is not shown in Fig. 15. Moreover, an outcoupling means is not described with any detail in the specification. Whitaker also fails to describe a base arrangement comprising a rotatable base plate of a material having an atomic number of less than 10. Thus, the cited combination fails to render obvious independent claim 1 or claims 3, 6 and 10, which depend therefrom because the combination does not disclose all of the features of claim 1. Applicants therefore request that the rejections under 35 U.S.C. § 103(a) of claims 1, 3, 6 and 10 be withdrawn.

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Conclusion

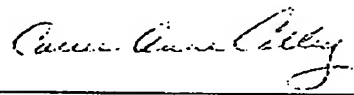
In view of the foregoing, Applicants respectfully submit that the specification, the drawings and all claims presented in this application are currently in condition for allowance. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

Applicants' representative believes that this response is being filed in a timely manner. In the event that any extension and/or fee is required for the entry of this amendment the Commissioner is hereby authorized to charge said fee to Deposit Account No. 14-1270. An early and favorable action on the merits is earnestly solicited.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call David Barnes, Esq., Intellectual Property Counsel, Philips North America Corporation at the number below.

Respectfully submitted,

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